What is claimed is:

1. A fluorinated carbon fiber comprising a coaxial stacking morphology of truncated conical tubular graphene layers,

wherein each of the truncated conical tubular graphene layers includes a hexagonal carbon layer and has a large ring end at one end and a small ring end at the other end in an axial direction,

wherein at least part of edges of the hexagonal carbon layers is exposed at the large ring ends, and

wherein the exposed edges of the hexagonal carbon layers are fluorinated and have a structure shown by C_xF_y.

2. The fluorinated carbon fiber as defined in claim 1,

wherein at least part of edges of the hexagonal carbon layers is exposed at the small ring ends.

3. The fluorinated carbon fiber as defined in claim 2,

wherein the coaxial stacking morphology of the truncated conical tubular graphene layers is vapor grown,

wherein at least part of the large and small ring ends is exposed by removing a deposited film formed during the vapor growth.

4. The fluorinated carbon fiber as defined in claim 1,

wherein the coaxial stacking morphology of the truncated

conical tubular graphene layers has a shape of a hollow core with no bridge.

5. The fluorinated carbon fiber as defined in claim 1,

wherein an outer surface of the fluorinated carbon fiber is formed of the large ring ends stacked in the axial direction, and

wherein exposed part of the edges of the hexagonal carbon layers has an area equal to or more than 2 percentages of an area of the outer surface.

6. The fluorinated carbon fiber as defined in claim 1,

wherein an inner surface of the fluorinated carbon fiber is formed of the small ring ends stacked in the axial direction, and

wherein the edges of the hexagonal carbon layers are exposed on the inner surface.

7. An active material for battery comprising the fluorinated carbon fiber as defined in claim 1 at least in part.

8. A solid lubricant comprising the fluorinated carbon fiber as defined in claim 1 in part.